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EXAMINER

ZERVIGON, RUDY

ART UNIT PAPER NUMBER

1763

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/087,558

Applicant(s)

DANDO ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 and 30-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 and 30-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-7, 12, 13-18, 20-27, 30, 45, 46, 54, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (USPat. 5,254,210) in view of Abe et al (USPat. 5,200,388). Jones teaches a reactive gas source precursor (GM1-GM4; column 3, line 61 - column 4, line 24; Figure 1) feeding manifold (80; column 3, line 61 - column 4, line 24; Figure 1,2) assembly, comprising: a body (injection header where all four three-way valves 81 feed to (not labeled); Figure 1,2) comprising a plenum chamber (inherency of any piping conduit as demonstrated by Applicant's Figure 1); a first valve (any of the four valves 81; Figures 1,2) proximate the body (injection header where all four three-way valves 81 feed to (not labeled); Figure 1,2) having at least two inlets (the body has four inlets as shown in Figure 1), and being multi-inlet valves, and at least one outlet (the body has one outlet – feeding reactor 25 as shown in Figure 1), at least one first valve (any of the four valves 81; Figures 1,2) inlet, all having angles of 0° relative to each other (“no plenum chamber inlet is angled”), and being configured for connection with a reactive precursor (GM1-GM4; column 3, line 61 - column 4, line 24; Figure 1) source, at least one valve outlet feeding to a precursor (GM1-GM4; column 3, line 61 - column 4, line 24; Figure 1) inlet to the plenum chamber (inherency of any piping conduit as demonstrated by Applicant's Figure 1); and the body (injection header where all four three-way valves 81 feed to (not labeled); Figure 1,2) comprising a plenum chamber (inherency of any

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pipng conduit as demonstrated by Applicant's Figure 1) outlet configured to connect with a substrate processing chamber.

Applicant's claim 1 limitation of "the first valve being the only valve associated with the precursor inlet; " is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Jones further teaches plural precursor feed streams (Figure 1; Abstract) including a precursor header (injection header where all four three-way valves 81 feed to (not labeled); Figure 1,2) where one gas flow inlet provides a venturi effect within the plenum chamber relative to all other gas flow inlets. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01). Compare Jone's Figure 1 with Figure 1 of the present application.

Jones further teaches the body's plenum chamber is longitudinally elongated and having a longitudinal axis (Figure 1). The body's plenum chamber having a first longitudinal axis end (upstream elbow) and a second longitudinal axis end (downstream elbow). Jone's plenum chamber outlet (second longitudinal axis end (downstream elbow)) being proximate the second

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end, the plenum chamber being vertical when the plenum chamber outlet is connected to the substrate processing chamber – Applicant’s claim limitation of “the plenum chamber being vertical when the plenum chamber outlet is connected to the substrate processing chamber” is an intended use requirement - Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Jones further teaches a second valve (any other of the four valves 81; Figures 1,2) associated with a gas source (“predetermined gas mixtures”; abstract). That the gas source is “a purge gas” is a requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Jones further teaches, the manifold (80; column 3, line 61 - column 4, line 24; Figure 1,2) assembly of claim 1 wherein the first valve (any of the four valves 81; Figures 1,2) has only two inlets and only one outlet (see 80; Figure 1,2), as claimed in claim 3 – Regarding “inlets” and

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“outlets” for Jones’s valves, and the identity of the gases flowing there through as being a “purge gas”, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Jones further teaches the manifold (80; column 3, line 61 - column 4, line 24; Figure 1,2) assembly wherein the plenum chamber (inherency of any piping conduit as demonstrated by Applicant’s Figure 1) is longitudinally elongated having a longitudinal axis (long axis), the plenum chamber (inherency of any piping conduit as demonstrated by Applicant’s Figure 1) having a first longitudinal axis end (upstream-most 81) and a second longitudinal axis end (downstream-most 81), the plenum chamber outlet being proximate the second end, as claimed in claim 12.

Jones further teaches an elongated segment (conduit piping between each of 81 and Jones’s body) joining the precursor feed streams Jones’s plenum chamber precursor inlet.

Jones does not teach a purge stream having a purge inlet to Jones’s plenum chamber. Jones does not teach a structure on the body (injection header where all four three-way valves 81 feed to (not labeled); Figure 1,2) configured to mount the body to his substrate processing chamber (25; Figure 1). Jone’s second valve is not a “single inlet and single outlet valve”, as claimed by claim 1.

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Abe teaches a similar precursor deliver system for film depositions (Figure 6; column 7, lines 4-22). Inclusive, Abe teaches a purge stream (precursor header to “exhaust device”; not labeled) having a purge inlet to a plenum chamber (precursor header; not labeled), the purge inlet is shown angled at 90° to the precursor inlet. Abe teaches valves that are “single inlet and single outlet valve” (33; Figure 1), as claimed by claim 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a purge stream having a purge inlet, on a longitudinal axis and angled at 90° to the precursor inlet, to Jones’s plenum chamber as taught by Abe, and further to replace a Jones valve with Abe’s valve that is a “single inlet and single outlet valve” (33; Figure 1).

Motivation to include a purge stream having a purge inlet to Jones’s plenum chamber as taught by Abe is for optimizing the composition of the gas delivered to the reactor as taught by Abe (column 4, lines 43-54), further, motivation to replace a Jones valve with Abe’s valve that is a “single inlet and single outlet valve” is for an alternate and equivalent means for conveying Jone’s processing gasses.

3. Claims 8-11, 19, 28, 31-44, 48-53, and 56-61 are ejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (USPat. 5,254,210) and Abe et al (USPat. 5,200,388) in view of McMillan et al (USPat. 5,316,579). Jones and Abe are discussed above. Jones and Abe do not teach a structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, as claimed in claim 8.

McMillan teaches a similar precursor gas delivery system (Figure 5; column 10; lines 10-25) including a flange structure (see 114/102 interface) on the body (114) enabling the plenum

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chamber outlet (114) proximate to and connected with a substrate processing chamber (102) inlet (114/102 interface).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include McMillan's flange structure (see 114/102 interface) on the body (114) as part of Jones and Abe's process gas delivery system.

Motivation to include McMillan's structure on the body as part of Jones and Abe's process gas delivery system is for ensuring hermetic integrity of the system.

Response to Arguments

4. Applicant's arguments filed September 30, 2004 have been fully considered but they are not persuasive.

5. Applicant requests reconsideration of the Examiner's interpretation of Jone's body as being an injection header where all four three-way valves 81 feed to (not labeled); Figure 1,2. The Examiner believes the interpretation is valid in light of Applicant's own body injection header (12; Figure 1).

6. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

7. Applicant states:

“

Dependent claims 1 , 14, 22 and 45 clearly recite precursor inlets to a plenum chamber and purge gas inlets into the plenum chamber as limitations within the body of the claims. These are very clearly structural limitations.

“

The Examiner agrees with Applicant to the extent that structural gas inlets as claimed by Applicant and taught by Jones' inlets (the body has four inlets as shown in Figure 1) are structural limitations. However, as to which particular gas these inlets feed, the Examiner asserts that such a weighted claim element is an intended use of the pending apparatus claims.

8. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion


9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.


12/27/14